

Table 5-3

Proposed High-Flow Surface Water Investigation Sample Locations

Sample Location ID (meters)	Alias				Source Type	Source Name	Concentration Data Source ¹	Zinc (µg/L)	Cadmium (µg/L)	Manganese (µg/L)	Location Description	Rationale
	FE	ARSG	USGS Database	Kimball et al. (2010)								
	CDPHE Water Quality Standard ¹¹											
4023	--	A56	AMIN-4023	--	S	Animas River	ARSG	360	1.80	--	At Animas River Stakeholder Group location A56; right bank access via gravel road	Background surface water sample location; furthest upstream sample location
4166	--	--	AMIN-4166	4166	S	Animas River	Kimball et. al (2010)	490	0.89	988	At Kimball et. al (2010) low-flow and high-flow in-stream sample location 4166; Kimball et. al (2010) Transport site T1; upstream from Arrastra Creek; right bank access via gravel road; limited left bank access	At Kimball et. al (2010) low-flow/high-flow in-stream sample location 4166, which exceeded the zinc water quality standard; immediately upstream of the confluence of the Animas River and Arrastra Creek; upstream of Mayflower Tailings Impoundments and Mill
A58-SS	--	A58	--	--	LBI	Arrastra Creek	ARSG	187.6	1.64	<10	At Animas River Stakeholder Group location A58; in Arrastra Creek upstream of the confluence with the Animas River	Arrastra Creek; approx. 230 feet upstream of confluence with Animas River
4220	--	A60	--	--	S	Animas River	ARSG	320	1.9	--	At Animas River Stakeholder Group location A60; right bank access via boat ramp immediately downstream of bridge on Colorado Road 52; left bank access by crossing the bridge	At Animas River Stakeholder Group location A60; zinc concentration of 320 µg/L exceeded water quality standard; adjacent to Mayflower Mill
4353C	--	--	--	4353	RBI	--	Kimball et. al (2010)	128,000	507	59,400	Stream level spring, At Kimball et. al (2010) right bank inflow sample location 4353; aluminum oxide colored water; right bank access via gravel road	Adjacent to eastern end of Tailings Impoundment 1; historical zinc, cadmium, and manganese concentrations exceeded their respective water quality standards at Kimball et. al (2010) right bank inflow location 4353 during the 2002 low-flow sampling event; aluminum oxide colored water; adjacent to Tailings Impoundment 1
4353A	--	--	--	--	RBI	Pipe	--	--	--	--	Inflow from pipe on right bank; right bank access via gravel road	Inflow from pipe on right bank; adjacent to Tailings Impoundment 1
4353B	--	--	--	--	S	Animas River	--	--	--	--	In stream sample; Immediately downstream of pipe inflow and seep inflow; right bank access via gravel road; limited left bank access	In stream sample; immediately downstream of pipe inflow and seep inflow; adjacent to Tailings Impoundment 1
4520	--	--	4520	--	RBI	--	USGS	97,400	385	781,000	At Kimball et. al. (2010) low-flow sample location 4520; Marshy ponds with algae near manganese concrete	At Kimball et. al (2010) low-flow right bank inflow location 4520; maximum to near maximum Zn, Cd, and Mn concentrations in 2002, all of which exceeded regulatory water quality standards; adjacent to Tailings Impoundment 1
4581	--	A61	AMIN-4581	--	S	Animas River	ARSG	1,038	2.78	923	At Animas River Stakeholder Group location A61; upstream of Boulder Creek; right bank access via gravel road; limited left bank access	At Animas River Stakeholder Group location A61; historical zinc and cadmium concentrations exceeded their respective water quality standards at A61; immediately downstream of Kimball et. al (2010) right bank inflow locations 4520 where elevated Zn, Cd, and Mn concentrations were observed in 2003, above regulatory standards; adjacent to Tailings Impoundment 1
4656	--	--	AMIN-4656	--	S	Animas River	--	--	--	--	Upstream for Pinacle Gap; right bank access via gravel road; limited left bank access	Downstream of Kimball et. al (2010) right bank inflow locations 4520 and 4544 where elevated Zn, Cd, and Mn concentrations were observed in 2002, above regulatory standards; adjacent to Tailings Impoundment 1
4734	6	--	--	--	RBI	Mine Adit	--	--	--	--	At observed mine adit; access via gravel road	At observed mine adit; adjacent to Tailings Impoundment 1
4749	4700	--	--	--	S	Animas River	--	--	--	--	Immediately downstream of observed mine adit; right bank access via gravel road; limited left bank access	Immediately downstream of observed mine adit; adjacent to Tailings Impoundment 1
4916	--	--	AMIN-4916	4916	S	Animas River	Kimball et. al (2010)	526	1.63	611	At Kimball et. al (2010) low-flow and high-flow in-stream sample location 4916; Kimball et. al (2010) Transport site T2 (low flow)/T3 (high-flow); immediately upstream from the road culverts for Boulder Creek; right bank access via gravel road; limited left bank access	At Kimball et. al (2010) low-flow and high-flow in-stream sample location 4916; high-flow zinc concentration 482 µg/L in 2003, which is above the water quality standard; Kimball et al. (2010) reported acid drainage inflows; at southern end of Tailings Impoundment 1
4951	--	A62	AMIN-4951	4951	RBI	Boulder Creek	ARSG	980	3.9	2,770	At Kimball et. al (2010) low-flow right bank sample location 4951 and Animas River Stakeholder Group location A62; on right bank of the Animas River; at confluence of Boulder Creek and Animas River; immediately downstream of where boulder creek flows across gravel road; access via gravel road	Boulder Creek bisects Tailings Impoundments 1 and 2; at Kimball et. al (2010) low-flow right bank sample location 4951 and Animas River Stakeholder Group location A62; historical Zn, Cd, and Mn concentrations exceeded their respective water quality standards at A62
5000	--	--	--	--	RBI	--	--	--	--	--	At observed right bank inflow; red colored water; access via gravel road	At observed right bank inflow; red colored water; adjacent to Tailings Impoundment 2
5038	--	--	--	--	RBI	--	Kimball et. al (2010)	12,400	13.7	224,000	At Kimball et. al (2010) low-flow sample location 5038; right bank access via gravel road; limited left bank access	At Kimball et. al (2010) low-flow sample location 5038; substantial orange precipitate in inflow noted by Kimball et. al (2010) in 2002; zinc, cadmium, and manganese concentrations exceeded their respective water quality standards at 5038 during the 2002 low-flow sampling event; substantial orange precipitate in inflow noted by Kimball et al (2010); adjacent to Tailings Impoundment 2
5306	--	A64	AMIN-5306	--	S	Animas River	ARSG	350	1.2	230	At Animas River Stakeholder Group location A64; right bank access via gravel road; limited left bank access	At Animas River Stakeholder Group location A64; historical zinc concentration exceeded the water quality standard at A64; adjacent to Tailings Impoundment 2
5356	--	--	--	--	RBI	--	USGS	17,300	48.6	89,700	At Kimball et. al. (2010) low-flow right bank inflow sample location 5356; discharge from slough draining tailings; right bank access via gravel road	At Kimball et. al. (2010) low-flow right bank inflow sample location 5356; Zn, Cd, and Mn concentrations exceeded their respective water quality standards at 5356 during the 2002 low-flow sampling event; adjacent to Tailings Impoundment 2
5608	--	--	--	--	RBI	--	--	--	--	--	At right bank inflow; drainage from Tailings Impoundment 2 area; right bank access via Colorado Road 2	Inflow from drainage from Tailings Impoundment 2 area; between Tailings Impoundments 2 and 3

Table 5-3

Proposed High-Flow Surface Water Investigation Sample Locations

Sample Location ID (meters)	Alias				Source Type	Source Name	Concentration Data Source ¹	Zinc (µg/L)	Cadmium (µg/L)	Manganese (µg/L)	Location Description	Rationale
	FE	ARSG	USGS Database	Kimball et al. (2010)								
	CDPHE Water Quality Standard ¹¹											
5858	--	--	AMIN-5858	5858	RBI	--	Kimball et. al (2010)	4,440	21	21,900	At Kimball et. al (2010) low-flow sample location 5858; small pool near stream; right bank access via Colorado Road 2	At Kimball et. al (2010) right bank inflow low-flow sample location 5858; zinc, cadmium, and manganese concentrations exceed their respective water quality standards at 5858 during the 2002 low-flow sampling event; upstream of Tailings Impoundment 4
5938	--	A65	--	--	S	Animas River	ARSG	430	1.1	400	At Animas River Stakeholder Group location A65; right bank access via Colorado Road 2; limited left bank access	At Animas River Stakeholder Group location A65; historical zinc concentrations exceeded the water quality standard at A65; adjacent to Tailings Impoundment 4
6013	1	--	--	--	RBI	Spring	--	--	--	--	Downstream of spring near metal building; access via Colorado Road 2; on private property	Downstream of spring prior to confluence with Animas River; adjacent to Tailings Impoundment 4
6150	--	--	--	6150	RBI	--	USGS	23,100	89.8	177,000	At USGS low-flow sample location 6150; Red stained right bank discharge	At USGS low-flow sample location 6150; USGS noted red stained right bank discharge during 2002 sampling event; Zn, Cd, Mn concentrations exceed their respective water quality standards at 6150 during the 2002 low-flow sampling event; adjacent to Tailings Impoundment 4
6215	2	--	--	--	RBI	--	--	--	--	--	Right bank inflow seep; red stained water, right bank access via Colorado Road 2	Right bank seep with red stained water; adjacent to Tailings Impoundment 4
6274	5				S	Animas River	--	--	--	--	In Animas river immediately downstream of right bank inflow seep with red stained water; right bank access via Colorado Road 2	Immediately downstream of right bank inflow seep with red stained water; adjacent to Tailings Impoundment 4
6528	--	--	AMIN-6528	--	S	Animas River	--	--	--	--	Upstream from former Lacawana Bridge; right bank access via Colorado Road 20; limited left bank access	Adjacent to the western end of tailings impoundment 4; approximately downstream from 830 feet downstream of right bank inflow seep with red stained water; adjacent to Tailings Impoundment 4
3	--	--	--	--	RBI	Pond	--	--	--	--	In pond upgradient of reactive treatment wall; right bank access via Colorado Road 20	In pond upgradient of reactive treatment wall
6768	--	A66	AMIN-6768	--	S	Animas River	Kimball et. al (2010)	676	2.06	1,400	Near Kimball et. al (2010) low-flow and high-flow in-stream sample location 6745 and Animas River Stakeholder Group location A66; at former Lacawana Bridge; right bank access via Colorado Road 20; limited left bank access	At Kimball et. al (2010) low-flow and high-flow in-stream sample location 6745; high-flow zinc concentration 585 µg/L in 2003, which is above the water quality standard; at Stakeholder site A66, downstream of the permeable reactive barrier located along the gravel road on the right bank
6879	7				RBI	Wetland					Right bank inflow at wetland near campground	Right bank inflow at wetland area
7049	--	--	--	7049	RBI	--	Kimball et. al (2010)	9,340	45.4	9,570	At Kimball et. al (2010) low-flow sample location 7049; in braid of Animas River during April 29, 2015 recon; right bank access via gravel road; limited left bank access	At Kimball et. al (2010) right bank inflow low-flow sample location 7049; zinc, cadmium, and manganese concentrations exceed their respective water quality standards at 7049 during the 2002 low-flow sampling event
7688	--	--	AMIN-7688		S	Animas River	--	--	--	--	At USGS sample location AMIN-7688; right bank access via E 16th Street; limited left bank access	At USGS sample location AMIN-7688; upstream of right bank inflow 7690
7690	--	--	--	7750	RBI	--	Kimball et. al (2010)	7,370	39.7	73,300	Approx. 60 meters upstream from Kimball et. al (2010) right bank inflow low-flow sample location 7750; during 4/30/2015 recon event 7750 was part of the main Animas River channel; ditch draining from pond; right bank access via Animas Street; left bank access via CO Road 32	Approx. 60 meters upstream from Kimball et. al (2010) right bank inflow low-flow sample location 7750; Zn, Cd, and Mn concentrations exceed their respective water quality standards at 7750 during the 2002 low-flow sampling event
7858	--	A68	AMIN-7858	7858	S	Animas River	ARSG	1,900	6.2	4,100	At Kimball et. al (2010) low-flow and high-flow sample location 7858 and Animas River Stakeholder Group location A68; Kimball et. al (2010) Transport site T3 (low flow)/T7 (high flow) – at 14th Street bridge with Kimball et. al (2010) stream gauge	At Kimball et. al (2010) low-flow and high-flow sample location 7858 and Animas River Stakeholder Group location A68; historical concentrations of zinc, cadmium, and manganese exceed their respective water quality standards at A68; furthest downstream sample location

Notes:

1. USGS = data from United States Geological Survey (Kimball et al., 2010)
2. ARSG = data from Animas River Stakeholders Group database (<http://www.animasriverstakeholdersgroup.org/page11.html>)
3. Sample results are representative of the date when the maximum historical zinc concentration was reported.
4. µg/L = Micrograms per liter
5. ft = feet
6. **BOLD**
7. S = Stream
8. RBI = Right Bank Inflow
9. LBI = Left Bank Inflow
10. <10 = concentration below noted laboratory reporting limit
11. See Table 5-2; the lowest standard reported was selected, not including table value standards